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## Documentation of Active Peregrine Falcon Nest Sites

**15 May 2000–14 May 2001**

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**Annual Research Performance Report  
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This is a progress report on continuing research. Information may be refined at a later date.

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# RESEARCH PERFORMANCE REPORT

**STATE:** Alaska

**COOPERATOR:** USDI Fish and Wildlife Service

**GRANT NO.:** SE-2-12

**STUDY TITLE:** Documentation of Active Peregrine Falcon Nest Sites

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## SUMMARY

We surveyed American peregrine falcons (*Falco peregrinus anatum*) along the Middle and Lower sections of the Yukon River, and arctic peregrine falcons (*F. p. tundrius*) along the Norton Sound coast in 2001. Population monitoring began on the Yukon River study areas in 1979 and in Norton Sound in 1987, but these areas had not been surveyed since 1991. Periodic surveys of these areas complement annual monitoring of the primary study areas established in the Alaska Peregrine Falcon Recovery Plan (US Fish and Wildlife Service (FWS) 1982).

On two of the study areas the number of sites occupied by peregrines increased dramatically, on the Middle Yukon River up from 16 sites in 1991 to 32 in 2000, and in Norton Sound up from 35 sites in 1990 to 64 sites in 2000. Only a slight increase was recorded on the Lower Yukon River, from 59 sites with peregrines in 1991 to 62 in 2000. Productivity on the Yukon River in 2000 was lower than that recorded between 1979 and 1991.

**Key words:** *Falco peregrinus*, peregrine falcon, abundance, monitoring, nesting, Yukon River, Norton Sound.

## CONTENTS

SUMMARY .....	1
BACKGROUND .....	2
OBJECTIVES .....	2
STUDY AREA AND METHODS .....	2
RESULTS AND DISCUSSION .....	3
CONCLUSIONS AND RECOMMENDATIONS .....	5
ACKNOWLEDGMENTS .....	5

## BACKGROUND

The peregrine falcon (*Falco peregrinus*) is a well-known species that suffered drastic declines and extirpations in North America during the 1960s as a result of pesticide contamination (Hickey 1969, Cade et al. 1988). Populations of 2 of the 3 subtaxa in Alaska (White 1968) declined significantly and were listed as endangered in 1970. The American peregrine falcon (*F. p. anatum*) nests in boreal and temperate forest regions and was delisted from endangered status by the federal government in 1999. The arctic peregrine falcon (*F. p. tundrius*) breeds in tundra regions. It was reclassified from endangered to threatened status by federal authorities in 1984, and delisted in 1994. Both the American and arctic peregrine falcons were removed from the Alaska State Endangered Species List in 1993 and placed on the Alaska Department of Fish and Game (ADF&G) list of Species of Special Concern. Peale's peregrine falcon (*F. p. pealei*), the third subtaxon in Alaska, lives in coastal regions of the state from the Aleutians south through the Gulf of Alaska and southeastern Alaska, and has never been classified as threatened or endangered. Unlike the American and Arctic subtaxa that are long-distance migrants wintering as far south as Argentina, Peale's peregrines are year-round residents of Alaska or short-distance migrants along the west coast of North America.

As part of a national program to restore peregrine falcon populations, the Alaska Peregrine Falcon Recovery Team developed a recovery plan for American and arctic peregrine falcons in Alaska (US Fish and Wildlife Service 1982). The plan recognized the importance of monitoring population trends, identifying nesting habitats and prey species, and protecting nesting areas from incompatible human activities. In addition to regular surveys of 4 representative study areas (Upper Yukon, Tanana, Colville and Sagavanirktok rivers), surveys were also recommended for other portions of the peregrines' range. The Middle and Lower Yukon River were surveyed annually from 1979 to 1991. The coastline of Norton Sound was surveyed each year from 1987 to 1991. Now that the peregrines are delisted, periodic surveys are conducted in those areas to monitor the status of the populations.

## OBJECTIVES

1. Survey adult American peregrines along the middle Yukon River as part of the 5-year post-delisting monitoring of American peregrines.
2. Survey adult arctic peregrine falcons in the coastal Norton Sound region to complete the range-wide survey of arctic peregrines in Alaska.
3. Identify as many individuals as possible by reading coded color leg bands.

## STUDY AREA AND METHODS

The Middle Yukon River study area is approximately 225 km of river frontage habitat in Interior Alaska (Fig. 1). Suitable cliff-nesting habitat occurs along this section of river from Ft. Hamlin to Tanana. The survey was completed on 24-28 July 2000 by out-board powered boat with

access from the bridge on the Dalton Highway approximately 150 miles north of Fairbanks, Alaska.

The Lower Yukon River study area is approximately 820 km of river frontage habitat in Interior Alaska. Suitable cliff-nesting habitat occurs along this section of river from near Ruby to Mountain Village. The survey was conducted during 10-20 July 2000. Compared to previous surveys, the entire study area was not covered in 2000; the area covered ranged from Ruby to near Holy Cross. The survey was completed by out-board powered boat with access from Galena, approximately 50 miles downstream from the beginning of the study area. We motored to the beginning of the study area, traveled downstream to near Holy Cross, and then returned to Galena.

Previous nesting sites and other areas of potential nesting habitat were checked with binoculars and spotting scopes to locate nesting birds. A Questar Field Scope with 16mm and 24mm ocular lenses was used to examine adults birds for color-leg bands. Observations were recorded on topographic maps, using GPS waypoints and catalogued by using a kilometer distance reference point. All observations are catalogued in the USFWS Alaska Raptor Database using a location number consisting of the river abbreviation and the kilometer reference point, e. g. YUKO689.5.

Nest site occupancy was classified as: vacant sites, single adults, failed pairs (no young produced), and successful pairs. Nestlings in accessible nest sites were banded with lock-on leg bands. No attempts were made to mark or band adult peregrine falcons.

From 10 to 14 June 2000 the coastline of Norton Sound was surveyed from Black Point, 48 km south of Unalalkeet, to Cape Prince of Wales, including the shorelines of Grantley Harbor and Tuksuk Channel near Teller. Three observers and the pilot of a Bell 206 Jet Ranger helicopter searched suitable coastal cliffs and bluffs from the air. At large seabird colonies we landed and searched on foot with binoculars to avoid disturbing the dense colonies of nesting birds. The survey followed the procedures developed in the late 1980s and early 1990s when peregrine surveys were first conducted in Norton Sound (Wright 1991), however only one early season (incubation period) survey was conducted in year 2000, rather than 2 complimentary surveys during incubation and pre-fledging or 1 late season survey as conducted in previous years. In addition to marking locations of observations on 1:63,360 scale USGS maps, latitude and longitude were recorded from the helicopter's GPS.

## **RESULTS AND DISCUSSION**

Both the Middle Yukon and Lower Yukon study areas showed significant increases in occupancy by peregrine falcons in 2000. On the Middle Yukon in 1991 there were 2 singles, 4 failed pairs, and 10 successful pairs producing 23 young. In 2000 this increased to 7 singles, 7 failed pairs, and 18 successful pairs producing 30 young (Table 1, Appendix A). Since single falcons are attending potential nest sites, the population will likely continue to increase in the future. No previously color-banded adults were observed among the adults present at nest sites. This is not surprising considering that it has been 10 years since the last color bands were applied in this area. Since the survey was conducted late in July, all young were nearly fledged and, consequently, no nestlings were banded.

The Lower Yukon River study area showed less impressive increases in total site occupancy (Table 2, Appendix B). Since the entire Lower Yukon River was not surveyed in 2000, we do not have an estimate of the total population increase during the period between 1991 and 2000. For the section between Ruby and Anvik, in 1991 there were 11 singles, 13 failed pairs, and 35 successful pairs producing 89 young. In 2000, the same area contained 12 singles, 21 failed pairs, 30 successful pairs producing 63 young. The total number of pairs increased from 48 to 51, although total young decreased from 89 to 63. Delayed onset of spring conditions and cold, wet conditions during the summer season probably contributed to the lower number of young produced in 2000. No previously color-banded adults were observed among the adults present at nest sites. Some accessible nest sites had nestlings of suitable age for banding and 17 nestlings were banded during the survey.

Productivity (number of young per total pair and number of young per successful pair) ranged from 3.00 young per total pair in 1982 to 0.96 young per total pair in 2000 for the Middle Yukon River (Table 1). The low productivity in 2000 is likely the result of poor spring weather during nest site selection and cold, damp conditions during the summer. Similar variation in productivity occurs for the Lower Yukon River: 2.24 young per total pair in 1980 ranging to 1.29 young per total pair in 2000 (Table 2).

In Norton Sound we surveyed approximately 775 km of coastline, and found peregrines at 64 sites. Because of limited funding we were unable to make multiple passes when a bird was observed, so we did not obtain definitive information on presence of pairs versus single birds, or evidence of nesting. Also, during a single survey during incubation, such as this June 2000 survey, we would expect to overlook some tight-sitting incubating birds, so the proportion of peregrines detected in this survey is probably lower than in previous surveys in Norton Sound. The area surveyed in Norton Sound varied over the years. In 1990 and 1991, the coast south of Black Point to Stuart Island was included, and in some years offshore islands (Besboro, Sledge and others) were visited. Even with these limitations, a dramatic increase in the number of sites occupied by peregrines was detected (Table 3, Appendix C). Comparing results from just the area included in the year 2000 survey, peregrines were present at nearly twice as many sites in 2000 (64) as in 1991 (33) and 1990 (35).

In addition to peregrines, we recorded the following species in Norton Sound: bald eagle (*Haliaeetus leucocephalus*; observed at 2 sites, including 1 active nest), golden eagle (*Aquila chrysaetos*; 6,3), osprey (*Pandion halietus*; 1,1), gyrfalcon (*Falco rusticolus*; 6,3), merlin (*Falco columbarius*; 1,0), rough-legged hawk (*Buteo lagopus*; 20,11), and common raven (*Corvus corax*; 27,14). A red-tailed hawk (*Buteo jamaicensis*) was seen defending a nest with a second incubating adult on a cliff on the west side of Cape Darby near Golovin. Nesting phenology influences the sightability of each species. For example, early nesters, such as ravens, golden eagles and gyrfalcons, had already hatched (several ravens had already fledged) at the time of this survey in mid-June, so young in nests were conspicuous. Later nesters, like the peregrine and rough-legged hawk were still incubating and less conspicuous because adults often held tight on nests.

## **CONCLUSIONS AND RECOMMENDATIONS**

The peregrine falcon populations along the Middle and Lower sections of the Yukon River, and in Norton Sound continued to expand during the decade from 1991 to 2000. Since single falcons were present at many suitable nest sites, there is room for continued growth of the populations.

We recommend the area be surveyed every five to ten years to document the long-term trend in population recovery and expansion.

## **ACKNOWLEDGMENTS**

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Table 1. Observations of American peregrines, Middle Yukon River, 1979-2000.

Year	Occupancy			Productivity		
	Lone adults	Failed pairs	Successful Pairs	Number of young <sup>b</sup>	Young per total pairs	Young per successful pair
1979	0	2	1	1	0.33	1.00
1980	0	2	4	11	1.83	2.75
1981	1	3	3	11	1.83	3.67
1982	0	0	6	18	3.00	3.00
1983	0	0	8	22	2.75	2.75
1984	1	1	5	14	2.33	2.33
1985	1	0	6	14	2.33	2.80
1986	2	3	4	12	1.71	3.00
1987	0	1	8	22	2.44	2.75
1988	1	2	8	20	2.00	2.50
1989	0	4	13	28	1.65	2.15
1990	4	0	11	16	1.45	1.45
1991	2	4	10	23	1.64	2.30
2000	7	7	18	24	0.96	1.33



Table 2. Observations of American peregrines, Lower Yukon River, 1979-2000.

Year	Occupancy			Productivity		
	Lone adults	Failed pairs	Successful Pairs	Number of young <sup>b</sup>	Young per total pairs	Young per successful pair
1979	7	4	18	36	1.64	2.00
1980	6	4	25	65	2.24	2.69
1981	7	11	24	66	1.89	2.75
1982	12	10	19	48	1.66	2.53
1983	10	8	31	75	1.92	2.42
1984	5	4	34	82	2.16	2.41
1985	10	7	31	73	1.92	2.35
1986	4	8	35	83	1.93	2.37
1987	9	6	37	85	1.98	2.30
1988	4	13	49	105	1.69	2.14
1989	14	14	52	105	1.59	2.02
1990	12	3	46	99	2.02	2.15
1991	11	13	35	89	1.85	2.54
2000	13	19	30	63	1.29	2.10

Table 3. Observations of arctic peregrine, Norton Sound coast, Alaska, 1987-2000.

Year	Occupancy			Productivity		
	Lone adults	Total pairs	Occupied Sites	Number of young <sup>b</sup>	Young per total pairs	Young per successful pair
1987 <sup>a</sup>	0	6	6	12	2.00	3.00
1988 <sup>b</sup>	1 or 2	19	20	34	1.79	2.62
1989 <sup>c</sup>	2	23	25	35	1.52	2.50
1990 <sup>d</sup>	10	27	37	53	1.96	2.52
1991 <sup>e</sup>	10	27	37	54	2.00	2.45
2000 <sup>f</sup>			64			

<sup>a</sup> 1 survey in July by boat and foot; Shaktoolik to Teller; no offshore islands

<sup>b</sup> 2 surveys, June and July, in helicopter; Black Point to Wales; Egg, Besboro and Sledge islands

<sup>c</sup> 2 surveys, June and July, in helicopter; Black Point to Wales; Sledge Island

<sup>d</sup> 2 surveys, June and July, in helicopter; Stuart Island to Wales; Sledge Island

<sup>e</sup> 1 survey in July; Stuart Island to Wales; Sledge Island

<sup>f</sup> 1 survey in June, Black Point to Wales; no offshore islands

Appendix A. Occupancy and productivity of American peregrine falcons at sites on the Middle Yukon River, Alaska, 1979-2000 [blank = not visited; V = vacant; L = lone adult; F = failed pair; S = successful pair, number = number of young; U = unknown. Data source: USFWS Alaska Raptor Database obsrec2.dbf]

Location	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	2000
YUKO658.8								L						S 2
YUKO663.5	F	F	F	S 4	S 4	F	L	F	S 1	F	S 1		F	
YUKO664.4														L
YUKO669.0														F
YUKO676.5								L			F	S U	S 1	F
YUKO678.9							S 2							L
YUKO682.5					S 4	S 3				S 2	F	S U	S 2	F
YUKO689.5			S 3		S 3	L						L		
YUKO690.2														L
YUKO693.3		S 2		S 2				S 4	S 4	S 3	S 3	S 4	F	S 3
YUKO698.5							S 3							S 1
YUKO705.5														S 1
YUKO711.3	F	F	L	S 4					S 3	S 2	S 2		S 3	F
YUKO711.5					S 3	S 3	S 2	S 3				S U		
YUKO719.2														S 2
YUKO725.8														F
YUKO728.7	S 1	S 4	S 4	S 3	S 1	S 2	S 1	F	S 3	L	S 3	L	S 3	S 3
YUKO752.8														S 2
YUKO755.5														S 2
YUKO758.7											S 2			F
YUKO771.7												S U	F	L
YUKO772.5											F			
YUKO777.5										S 3			S 2	S U
YUKO779.5											S 1	L		
YUKO810.2									S 2					
YUKO810.8		S 3	S 4	S 2	S 2			S 2		S 4	S 4	S 1	S 4	S 3
YUKO816.4			F		S 1	S 3	S 3	S 3	S 3	S 1	S 1	S 3	F	S 1
YUKO819.0											F	S 3	S 1	S 1
YUKO820.1														F
YUKO821.2													L	
YUKO824.8											S 3			
YUKO827.2													S 3	S 2
YUKO833.2														S 1
YUKO841.7								F						
YUKO842.3		S 2	F	S 3	S 4	S 3	S 3		S 2	S 1	S 1	S 3	L	S 1
YUKO847.9														S 2
YUKO849.7										F	S 2	S U	S 1	
YUKO852.5									S 4	S 4	S 3	S 2	S 3	S 2
YUKO858.5												L		S 1
YUKO860.2									F		S 2			L
YUKO867.0														L
YUKO882.1														L
TOTALS														
L (Lone adult)	0	0	1	0	0	1	1	2	0	1	0	4	2	7
F (Failed pair)	2	2	3	0	0	1	0	3	1	2	4	0	4	7
S(Successful pr)	1	4	3	6	8	5	6	4	8	8	13	11	10	18
Minimum young	1	11	11	18	22	14	14	12	22	20	28	16*	23	24*
PRODUCTIVITY														
Yng/total pair	0.33	1.83	1.83	3.00	2.75	2.33	2.33	1.71	2.44	2.00	1.65	1.45	1.64	0.96
Yng/successful pr	1.00	2.75	3.67	3.00	2.75	2.80	2.33	3.00	2.75	2.50	2.15	1.45	2.30	1.33



Appendix B. Occupancy and productivity of American peregrine falcons at sites on the Lower Yukon River, Alaska, 1979-2000 [blank = not visited; V = vacant; L = lone adult; F = failed pair; S = successful pair, number = number of young; U = unknown, NS = not surveyed. Data source: USFWS Alaska Raptor Database obsrec2.dbf]

Location	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	2000
YUKO954.3								S 3	S 1	S 3	L,S1	S U		
YUKO1072.8							S 2	S 3	S 4	S 3	S 1	S 3	S 4	S 3
YUKO1078.8									S 1		S 1			F
YUKO1080.4			F			S 3	L			S 2	F	L	S 2	F
YUKO1090.0											S 1			S 2
YUKO1094.5				L					F					S 1
YUKO1096.6											S 3			
YUKO1098.3													L	
YUKO1103.7					L	S 2	S 3	S 2	S 3	F	S 3	S 4	S 2	S 2
YUKO1108.0													S 2	
YUKO1108.8												S 2	L	F
YUKO1110.5	S 3	S 4	L	S 4	S 4	S 3	S 4	S 3	S 3	S 2	S 1		F	F
YUKO1112.8											F	S U	S 1	S 2
YUKO1122.2														F
YUKO1132.7		S 1	S 3	S 3	S 2	S 2	S 3	S 3	F	S 1	S 2	F		S 2
YUKO1138.4										S 1	F	S 2		S 3
YUKO1141.5														L
YUKO1154.1										L	F			
YUKO1194.0	S 3	S 2	S 2	S 3	S 2	S 2	S 2	F	S 3	S 3	L,F	S 2	S 3	L
YUKO1205.0									S 1	F	L		F	S 3
YUKO1207.3	F	S 4				S 2	F					L	F	L
YUKO1209.0	S U		L	S 2	S 2		L	S 2	S 3	S 3	S 3	S U	F	F
YUKO1225.2								S 2	S 4	S 2	S 2		S 3	
YUKO1227.2													S 1	
YUKO1228.6	F	S 4	F	L	S 1	L	L	F	L	S 1	S 1	S 2	L	S 3
YUKO1230.8											L			
YUKO1231.0														S 2
YUKO1232.9			L	F	F	S 4	S 2		L	F	S 3	S 2	S 4	
YUKO1233.5														L
YUKO1240.4	L		S 3		S 1	L	S 2	S 2	S 3	S 2	S 3	S 2	F	L
YUKO1250.5											S 3	S 4	S 3	
YUKO1256.2									S 1	S 2	S 3	S 3	S 4	S 3
YUKO1260.1									S 3	S 2			L	F
YUKO1261.5											S 3	S U	F	F
YUKO1266.5									L	S 3	S 1		S 1	F
YUKO1269.0	L	S 4	S 3	S 3	S 2	S 3	S 3	S 1	S 1	S 1	F		S 2	L
YUKO1270.3										S 3	S 2		S 1	
YUKO1271.5								S 1						F
YUKO1276.3	L	S 3	S 4	S 3	S 1	S 3	S 3	S 2	S 2	S 3	S 2		S 3	F
YUKO1279.0					L									S 3
YUKO1279.6												L	S 2	
YUKO1282.5			L		L	S 2	S 3	F	S 3	S 2	S 2		S 3	L
YUKO1287.5														S 3
YUKO1291.3			L	S 2	S 1	S 3			S 3	F	S 4		S 1	F
YUKO1305.5														L
YUKO1309.5	S 2	F	S 1	S 2	S 3	S 3	S 4	F		S 1	S 4	S 4	F	F
YUKO1316.8									F					
YUKO1322.6												L	F	
YUKO1323.3														L
YUKO1325.4	L	S 4	S 4	F	S 2	S 2		F	S 2	S 2	F	F		
YUKO1326.8													F	
YUKO1330.6	F	S 2	S 3	L	S 3	F	S 1	S 1	L	F	S 2	L	S 3	S 3

Location	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	2000
YUKO1331.6													S 4	S 2
YUKO1338.5							S 3		F	S 3		L		
YUKO1339.0	L												S 3	
YUKO1339.7		S 3	S 4	S 4	S 3	S 4		S 3			S 3	S U	L	F
YUKO1345.1												S 1		F
YUKO1350.0										F	L		S 3	
YUKO1363.5				L	S 2	S 3					S 4	L		S 1
YUKO1364.5														L
YUKO1365.7							S 3	S 3	S 2	S 4	F	S 3	S 1	
YUKO1367.8		S 2		S 3					S 1	L		S 3	S 1	S 2
YUKO1368.7	S 2		S 3		S 1	S 2	S 2	S 3		S 2	L, SU	S 4	F	S 1
YUKO1373.4			F		S 3	S 2	F	S 1	S 1	S 3	S 3		L	S 1
YUKO1399.0	S 4	L	F	L	F	F	S 1	L		S 2	F	S 2	F	F
YUKO1421.8													L	
YUKO1425.0	F	F		F	S 3	S 1	F					S 3	S 3	
YUKO1425.6								S 2	S 1	S 2	S U			
YUKO1430.5													S 3	L
YUKO1432.0	L	S 3	F	L	S 3			S 2		S 3	F	L	L	
YUKO1433.0												L	S 3	
YUKO1435.0										S 2	F	S 2	S 2	F
YUKO1438.5			F	S 2	S 3	S 4	S 1		L	F	S 2	S 3	S 4	S 2
YUKO1441.5								F	L	S 3	F		S 1	L
YUKO1451.8	S 3		F	S 1	F		S 1	S 2	S 2	S 3	S 3	S 4	S 4	S 2
YUKO1474.0													L	
YUKO1481.4	S 2													
YUKO1482.3		S 3	S 4	S 3	S 3	S 2	S 2	S 3	S 3	F	F	S 3	S 4	S 2
YUKO1485.0														S 3
YUKO1487.2										S 1	S 1	S U	S 2	
YUKO1498.6											L	F		
YUKO1500.7		S 3	S 3			S 2	S 3			S 3	S 1		L	
YUKO1502.8				S 1			L	S 2	S 2			S U	S 4	
YUKO1508.5											S 4	S 2	F	S 2
YUKO1509.5										S 2				
YUKO1510.4	S 1	S 4	S 4	S 4	S 3	S 1	F	S 1	S 1	S 1	S 3	S 3	F	F
YUKO1512.0											L		L	S 1
YUKO1516.5										L				
YUKO1520.2			F	L	S 2					S 2	F	S 2	S 2	S 2
YUKO1522.1						S 2	F	S 3	S 2				NS	
YUKO1542.9		S 2	S 1	S 2	F	S 3	S 1		F	S 2	S 2	S 3	NS	S 1
YUKO1547.9	S U	S 2	S 3	F, L	S 1		S 3	S 4		S 1		S 3	NS	F
YUKO1548.2					L	L, S3	L	F			L		NS	
YUKO1573.2					L					S 2			NS	S 3
YUKO1578.5		S 1	S 1	L	F	S 2	F	S 4	S 1	F	S 3	S 3	NS	F
YUKO1609.0	S 2	S 1	S 1	S 2	F		F	S 2	F	S 1	S 1	S 3	SN	L
YUKO1609.8													NS	S 2
YUKO1614.5	S 2	S 2	S 1	L	L	L	S 3	S 4	S 1	F	S 2	S 1	NS	S 1
YUKO1620.6			S 2	F	S 3	S 3	S 3	S 2	S 1				NS	NS
YUKO1621.5	S 3	S 2								S 2	F		NS	NS
YUKO1627.5					L	S 2		S 2		S 2	S 3		NS	NS
YUKO1632.3	S 3	S 3	L		S 3		S 3		S 2	F	S 3		NS	NS
YUKO1635.5										F	S 3		NS	NS
YUKO1638.8	S 1	S 2	S 4	S 1	S 4	S 1	S 3	S 4		L	S 3	S 3	NS	NS
YUKO1641.8				F	S 2	S 3	S 2	S 2			L		NS	NS
YUKO1643.5			F						S 3	S 2	S 3	S 3	NS	NS
YUKO1671.2					S 2	S 2							NS	NS
YUKO1671.5		L	S 4	F			S 1	L	S 4	S 1	S 3	S 1	NS	NS
YUKO1689.0												S 3	NS	NS
YUKO1699.8		S 2	F	F	F	F	L	S 3	S 4	S 4	S U	L	NS	NS
YUKO1708.4	S 1	F	F	F					L				NS	NS
YUKO1708.5							L			S 1	S U	S 2	NS	NS

Location	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	2000
YUKO1709.2					L	F			L				NS	NS
YUKO1709.5					L								NS	NS
YUKO1709.8											S 3		NS	NS
YUKO1710.1								S 1					NS	NS
YUKO1727.7											L		NS	NS
YUKO1729.7	S 4	L	S 4	F	S 4	S 2	S 3	F	S 4	F	S U	S 2	NS	NS
YUKO1731.4											S U		NS	NS
YUKO1741.5	S U	S 2	S 4	L								L	NS	NS
YUKO1742.2					S 1	S 3	L	L	L	S 2	S U		NS	NS
YUKO1757.0											S U		NS	NS
YUKO1758.5		L	S 2	S 3	S 3	S 1	S 1	S 3	S 3	S 2	L	L	NS	NS
YUKO1759.6	L	F					L	L		S 2	L	S 2	NS	NS
YUKO1773.3							L		S 3	S 1	L	S 3	NS	NS
YUKO1851.0		L				L							NS	NS
YUKO1851.8				L	L		S 2						NS	NS
YUKO1853.6					F								NS	NS
YUKO1855.1		L	L					S 2	S 3	S 2	S 1	S U	NS	NS
YUKO1893.0												S 2	NS	NS
TOTALS														
L (Lone adult)	7	6	7	12	10	5	10	4	9	4	14	12	11	13
F (Failed pair)	4	4	11	10	8	4	7	8	6	13	14	3	13	19
S(Successful pr)	18	25	24	19	31	34	31	35	37	49	52	46	35	30
Minimum young	36	65	66	48	75	82	73	83	85	105	105	99	89	63
PRODUCTIVITY														
Yng/total pair	1.64	2.24	1.89	1.66	1.92	2.16	1.92	1.93	1.98	1.69	1.59	2.02	1.85	1.29
Yng/successful pr	2.00	2.69	2.75	2.53	2.42	2.41	2.35	2.37	2.30	2.14	2.02	2.15	2.54	2.10

Appendix C. Observations of arctic peregrines in Norton Sound, June 2000

Km #	Site	Latitude	Longitude	Peregrines Observed
NORT220.4	Black Point	63.553	161.112	1, inc
	Tolstoi Pt	63.623	161.001	1 ad fly
		63.632	160.957	1,M perched
		63.678	160.880	1, perched
		63.707	160.840	2,pair
NORT281.4	Blueberry Pt	63.997	160.898	2,pair
	Egavik N	64.052	160.940	1,flushed
		64.057	160.942	1,M flushed
		64.087	160.947	1,flushed
ca NORT296		64.103	160.943	1,fly
NORT299.5	Junction Crk N	64.137	160.955	2,pair inc
		64.165	160.953	1,flushed
		64.182	160.955	1,flushed
ca NORT306		64.190	160.958	2,pair
		64.402	161.503	1,flushed
NORT357.9	Cape DenbighTip E	64.378	161.528	1,inc
		64.500	161.530	1,inc
NORT362.1		64.400	161.522	1
		64.407	161.525	1,flushed
	Reindeer Hills	64.430	161.495	1
		64.440	161.482	1



NORT372.0		64.482	161.482	1,inc
		64.498	161.467	2,pair
NORT408.8	Island Pt	64.587	161.085	1,flushed
		64.810	161.345	2,inc
NORT497.1	Baldhead E	64.773	161.375	1
NORT500.7		64.760	161.423	1,flushed
		64.760	161.435	1,perched
		64.758	161.470	1,brown
ca NORT551	Elim N	64.627	162.230	1
		64.605	162.285	2,inc
		64.585	162.362	2,pair
		64.573	162.408	1,perched
		64.582	162.377	1,flushed
		64.520	162.557	1
		64.503	162.575	1,flushed
ca NORT599	Vuarnet E	64.363	162.712	1,M flushed
		64.350	162.743	1,perched
NORT603.8	Cape Darby Tip	64.332	162.770	1,perched
		64.325	162.785	1,perched
		64.357	162.810	1,fly
		64.372	162.803	1,flushed
		64.380	162.798	1,M
		64.405	162.807	2,pair
		64.425	163.102	1,perched
		64.403	163.135	1,fly
NORT718.1	Rocky Pt	64.398	163.167	1,M perched

		64.412	163.195	1
		64.445	163.238	1,inc
ca NORT735		64.492	163.327	2,pair
NORT752.4	Square Rock	64.565	163.617	2,pair
NORT754.7	Koyanna Crk, Bluff	64.567	163.673	active
NORT757.2	Bluff, highest	64.567	163.728	? Not visited
		64.560	163.898	1
	Topkok E Thumb	64.557	163.955	1,perched
NORT774.1	Topkok W	64.553	163.997	1,perched
NORT826.8	Cape Nome	64.437	165.005	1,defend
	Moon Mtn W	64.756	166.385	1,fly
NORT983.1	Cape Riley N	65.225	166.467	2,pair, inc
		65.233	166.168	2,pair, inc stick nest
	Lost River E	65.393	167.122	1
ca				
NORT1076	Kotzebue Crk EE	65.395	167.722	1,F flushed
	King River W	65.408	167.420	1
		65.415	167.457	1,flushed
		65.525	167.772	1, fly
	Wales Mtn			none

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